

# BT CCL

## Typical Example

CCL-HL832		CCL-HL832HS				
Tg (DMA)	deg. C	210	Type HS	Type LS	Type LT	Type VT
Thermal Expansion	ppm/deg. C	15,15,55	15,15,45	15,15,45	14,14,35	14,14,35
Dk at 1GHz	-	4.2	4.4	4.4	4.4	4.4
Df at 1GHz	-	0.0120	0.0100	0.0100	0.000	0.0100
Flexural Modules	kgf/mm <sup>2</sup>	2200-2400	2500-2600	2500-2600	2500-2600	2500-2600
Thermal Conductivity	kcal/m.hr.deg. C	0.29	0.44	0.44	0.44	0.44

CCL-HL832TF		CCL-HL832MG				CCL-HL832NB		CRS-501	
Tg (DMA)	deg. C	210	205	205	205	220	220	220	220
Thermal Expansion	ppm/deg. C	15,15,45	15,15,50	15,15,50	15,15,35	14,14,45	14,14,45	45,45,45	45,45,45
Dk at 1GHz	-	4.3	4.0	4.0	3.9	4.4	4.4	3.8	3.8
Df at 1GHz	-	0.0120	0.0080	0.0080	0.0050	0.0130	0.0130	0.0160	0.0160
Flexural Modules	kgf/mm <sup>2</sup>	2200-2400	2200-2500	2200-2500	2200-2500	2300-2400	2300-2400	300	300
Thermal Conductivity	kcal/m.hr.deg. C	0.44	0.29	0.29	0.44	0.44	0.44	0.20	0.20

MITSUBISHI GAS CHEMICAL COMPANY, INC.



# TAIYO AMERICA, INC.

"Producing Superior Products Creates New Demand"

## TAIYO PSR-4000 (AUS5)

### LIQUID PHOTOIMAGEABLE SOLDER MASK FOR BGA APPLICATIONS PROCESS GUIDE

TAIYO PSR-4000 (AUS5) is a two-part epoxy liquid photoimageable solder mask specifically designed for Ball Grid Array (BGA) applications. It has excellent moisture resistance properties and can withstand pressure cooker type testing. PSR-4000 (AUS5) can be applied by screen printing or spray application and can be developed in a 1% aqueous alkaline solution. PSR-4000 (AUS5) exhibits minimum undercut and is also resistant to electroless nickel/gold.

### CARACTERISTICS

Item	PSR-4000 (AUS5)	PSR-4000 (AUS303)
Color	Green	Green
Solid content	70-80 wt%	70-80 wt%
Viscosity	220 cP@25°C	150 cP@25°C
E-type viscosity (at 25°C)		
For UV cure (Stored over 6 months)	24 hours (after mix)	24 hours (after mix)
For heat cure (Stored over 6 months)	6 months after production (3 months for AUS303)	6 months after production (3 months for AUS303)
Exposure	400-600 mJ/cm <sup>2</sup> (On solder mask)	350-450 mJ/cm <sup>2</sup> (On solder mask)
Development	60-90 sec/1wt% Na <sub>2</sub> CO <sub>3</sub> 30°C	50-120 sec/1wt% Na <sub>2</sub> CO <sub>3</sub> 30°C
Post cure	60 min. Hot air convection oven, 150°C	60 min. Hot air convection oven, 150°C
Post UV cure	100 mJ/cm <sup>2</sup> (High pressure mercury lamp)	100 mJ/cm <sup>2</sup> (High pressure mercury lamp)
Penetration	≥4H	≥3H
Adhesion (ASTM D20)	100/100	100/100
Solder mask resistance	3 cycles	3 cycles
Electroless nickel/gold	Passes 0.15um Au 1um Ni	Passes 0.15um Au 1um Ni
Porosity	≤1x10 <sup>-6</sup>	≤1x10 <sup>-6</sup>
Insulation resistance	Initial: ≥2.1x10 <sup>10</sup> Ω Conditioned: ≥1.0x10 <sup>10</sup> Ω	Initial: ≥3.0x10 <sup>10</sup> Ω Conditioned: ≥3.0x10 <sup>10</sup> Ω
For PSR-4000 (AUS5)	Passed	Passed
Insulation resistance	Initial: ≥2.1x10 <sup>10</sup> Ω Conditioned: ≥1.0x10 <sup>10</sup> Ω	Initial: ≥3.0x10 <sup>10</sup> Ω Conditioned: ≥3.0x10 <sup>10</sup> Ω
CTE	α1: 80 ppm α2: 150 ppm	α1: 57 ppm α2: 150 ppm
Tg	104°C	113°C
Elastic modulus	3.5 GPa	2.8 GPa
Elongation	1.70%	2.00%
Tensile strength	31 MPa	44 MPa
Flammability	UL94V-0	UL94V-0

BEST AVAILABLE COPY